



## FAQ: NordicStoves

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### **What happens when heating oil is burned?**

When oil reaches flash point, a chemical reaction occurs that creates heat, carbon dioxide, water vapor, carbon monoxide and other by products. For complete combustion, one pound of #1 heating oil requires approximately 250 cubic feet of air and creates 1.2 pounds of water vapor (steam). A rule of thumb- one pint of burned #1 heating oil creates one pint of water.

### **What is a BTU?**

A British Thermal Unit (Btu) is the amount of energy that will raise one pound of water one-degree Fahrenheit. Generally, the term is used as Btu per hour (Btu/hr).

### **What does combustion efficiency or efficiency mean?**

This can be a rather confusing topic. Efficiency as applied to heating equipment generally means the amount of fuel that is converted to heat. This does not tell us the amount of heat that is delivered to the heated area.

An AFUE rating is a combination of combustion efficiency, stand-by loss, electrical efficiency, and other factors. If the AFUE is 80%, this means for every \$1.00 spent on fuel \$0.80 of heat is delivered to the heated area.

### **What is the difference between yellow flame and blue flame vaporizing burner?**

A yellow flame burner typically has multiple burner rings and creates yellow, blue, and orange flames. The Nordic Stove is a yellow flame burner.

A blue flame burner typically has one burner ring and a catalyst. The flame is primarily blue with yellow tips at higher burn levels.

(Note: the old term for a vaporizing burner is a drip pot burner.)

### **Does the NordicStove require a chimney?**

Yes. The chimney provides two functions. It carries the combustion by products outside and it pulls (vacuum) combustion air into the burner. The chimney should be the same size as the stove connector. A single wall 24-gauge stove pipe (see manual for clearances) can be used to connect stove to an insulated chimney type "A" or higher rating. An insulated chimney must be installed when passing through combustible areas (ceiling, wall, roof, ..). All chimney outside the building must be insulated to provide proper vacuum and prevent the water vapor from becoming liquid water or ice.

### **How does a chimney work?**

The hot gases in the chimney are lighter than the air around the chimney. These gases rise and create a vacuum or suction. Both the temperature of the combustion gas and height of the chimney determine the amount of vacuum (draft) in the chimney. The vacuum (draft) for the Nordic should be approximately  $-0.034$  on low burn and  $-0.078$  on high. You must provide a method for air to enter the building to replace the air consumed by the stove. The Nordic Stove has a collar located on the bottom that can be connected directly to the outside (see manual).

### **How does the chimney height affect the performance of a NordicStove?**

Both the chimney height and construction are critical to the Nordic Stove performance. A short chimney will not pull adequate combustion air into the burner creating a smoky sooty burn. A tall chimney will pull too much air into the burner, which cools the burner and causes carbon accumulation. The chimney height for the Nordic should be between 10 and 16 feet. Installing a barometric damper on the chimney approximately 18 inches above the stove can reduce the effects of a tall chimney or wind. (Note: Chimneys less than 10 feet tall can be used in tents or other applications. However, the stove may burn sooty on the lowest setting.)

### **Can the NordicStove be connected to a masonry chimney?**

Masonry chimneys typically have large diameters and large masses. A Nordic Stove can be installed to a masonry chimney if a stainless-steel liner of the correct diameter is installed inside the masonry chimney. If the masonry chimney is located outside the building, the area between the liner and chimney should be filled with suitable insulation.

### **Can the stove be set on low burn and left unattended for long periods?**

This can be problematic. The temperature of the combustion gas determines the vacuum in the chimney. If the temperature drops, extra heat is removed from the chimney, which lowers the combustion gas temperature. This reduces the vacuum and creates a sooty burn. This problem is compounded if the combustion air comes directly from outside. The burner temperature drops and does not properly vaporize the fuel causing carbon and soot. If enough heat is removed from the chimney, the water vapor will change to liquid water or possibly ice.

Conversely, if the temperature increases, the building may reach very high temperatures.

### **Can the stove be increased directly from low burn to high burn?**

The burn rate should be increased slowly to allow the burner and chimney temperature to increase gradually. Generally, an increase of 1/6 turn per 10 minutes depending on room temperature is a good rule-of-thumb.

This is also true for reducing the burn rate. If the stove is turned directly from high burn to low burn, the vacuum in the chimney may blowout the flame in the burner.